UNITED STATES PATENT AND TRADEMARK OFFICE

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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-25* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,2,6,7,10,11 and 15-24* is/are rejected.

7) ☒ Claim(s) *3-5,8,9,12-14 and 25* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Response to Amendment

2.   Applicant's arguments filed July 11, 2005, with respect to Claims 1, 2, 6, 7, 10,

11, 15-17, and 21-24 have been fully considered but they are not persuasive.

3.   With regard to Claims 1, 2, 7, and 11, Applicant argues that the amount of data

volume would not be reduced by any combination of Yutaka (US005664163A) and

Peaslee (US005265203A) (pages 12-13).

In reply, the Examiner disagrees. Yutaka describes merging a plurality of

drawing commands (43; Col. 6, lines 65-67; Col. 7, lines 1-13). Yutaka describes that in

the prior art, sometimes the drawing instructions are shorter than the packet are frequency

used, and there occur many inefficient transfer operations (Col. 2, lines 17-34), meaning

that there is a large volume of transfer data. Therefore, Yutaka describes translating the

merged drawing commands into a single drawing command, thereby reducing a volume

of the transfer data (Col. 2, lines 17-24; Col. 7, lines 1-13).

4.   With regard to Claims 15-17, Applicant argues that Zhao (US006405267B1) does

not reduce the data volume. Zhao does not teach a command analysis routine (pages 15-

16).

In reply, the Examiner states that Yutaka teaches reducing the data volume, as

discussed above. There is no mention of a command analysis routine in the claims, and

therefore Zhao does not have to teach a command analysis routine.

5.   With regard to Claims 21-24, Applicant argues that in Epard (US005241625A)

the first apparatus does not merge graphics commands to reduce the amount of data

volume that the first apparatus transmits to the second apparatus (pages 19-20).

In reply, the Examiner states that Epard is used soley for the teaching that the first

apparatus (50, Figure 5A) includes a first drawing engine (55) and the second apparatus

(60) includes a second drawing engine (61) (Col. 48, lines 26-57). Epard is combined

with Yutaka, which teaches that the first apparatus (42, 43, 45, Figure 1) merges graphics

commands to reduce the amount of data volume that the first apparatus transmits to the

second apparatus (61) (Col. 7, lines 1-13; Col. 2, lines 17-34).

6.   Applicant's arguments with respect to claims 18-20 have been considered but are

moot in view of the new ground(s) of rejection.

7.   Applicant's arguments, see pages 17-19, filed July 11, 2005, with respect to the

rejection(s) of claim(s) 18-20 under 35 U.S.C. 103(a) have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further

consideration, a new ground(s) of rejection is made in view of Tidwell

(US006437789B1).

8.   Applicant's arguments, see pages 13-14 and 20-22, filed July 11, 2005, with

respect to Claims 3-5, 8, 9, 12-14, and 25 have been fully considered and are persuasive.

The rejections under 35 U.S.C. 103(a) of Claims 2-5, 8, 9, 12-14, and 25 have been

withdrawn.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed
> or described as set forth in section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are such that the subject
> matter as a whole would have been obvious at the time the invention was made to
> a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was
> made.

10.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
     obviousness or nonobviousness.

11.   Claims 1, 2, 6, 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yutaka (US 5,664,163) in view of Peaslee (US 5,265,203).

12.   With regard to Claim 1, Yutaka discloses a data transferring apparatus for

transferring transfer packets each including one or more transfer data as objectives of

transfer from a first apparatus (42, 43, 45, Figure 1) to a second apparatus (61), each

transfer data including commands indicating processes against a preliminarily assigned

area, the first apparatus including a scheduler for merging a plurality of drawing

commands (43; Col. 6, lines 65-67; Col. 7, lines 1-13). Yutaka describes that in the prior

art, sometimes the drawing instructions are shorter than the packet are frequency used,

and there occur many inefficient transfer operations (Col. 2, lines 17-34), meaning that

there is a large volume of transfer data. Therefore, Yutaka translating the merged

drawing commands into a single drawing command, thereby reducing a volume of the

transfer data (Col. 2, lines 17-24; Col. 7, lines 1-13); and a communication controller (42)

for generating transfer packets each including at least one of one or more plurality of

drawing commands whose amount is within a certain predetermined range (Col. 2, line

15) and one or more merged drawing commands (Col. 3, lines 1-8, 25-28), the

communication controller transferring the generated transfer packets to the second

apparatus (45; Col. 3, lines 12-14).

        Yutaka, however, is silent as to whether the plurality of drawing commands

merged by the scheduler is merged by meeting a certain requirement. According to the

disclosure of this application, the certain requirement that is met is that the scheduler

merges the data in accordance with the mutual dependency of the instructions among

themselves (Page 15, lines 13-18). However, Peaslee discloses a scheduler, which

Peaslee calls a cogenerator (10, Figure 1), for merging a plurality of transfer data (Col. 3,

lines 19-23). The cogenerator has a multiprocess scheduler (12, Figure 2; Col. 5, lines 5-

12) that prevents the subsystems from using the same output at the same time, which

means that the data must be merged in such a way that that they are not depending on the

same output, which means that the data is merged in accordance with the mutual

dependency of the instructions among themselves (Col. 5, lines 50-59).

It would have been obvious to one of ordinary skill in this art at the time of

invention by applicant to modify the device of Yutaka so that the scheduler merges the

data in accordance with the mutual dependency of the instructions among themselves as

suggested by Peaslee because Peaslee suggests that the data that are dependent on each

other cannot be transferred at the same time (Col. 5, lines 54-59).

13.   With regard to Claim 2, Claim 2 is similar in scope to Claim 1, and therefore is

rejected under the same rationale.

14.   With regard to Claim 6, Yutaka discloses that the first apparatus comprises a

computer (Col. 1, lines 9-14) and the second apparatus comprises a display apparatus (65,

Figure 1).

15.   With regard to Claims 7 and 10, Claims 7 and 10 are the same as Claims 1 and 6,

except that Claims 7-10 are for a method instead of an apparatus. Yutaka discloses both

the data transferring method (Col. 2, lines 46-62) and its apparatus. The details of the

method can be seen in Figure 11, steps 101-109, and are described in Col. 11, lines 31-67; Col. 12, lines 1-37. The details for the method for changing the drawing commands if the judging judges that the offset is possible, with regard to Claim 9, can be seen in Figure 4C; Col. 9, lines 38-51.

Peaslee also discloses both the apparatus and method. Figure 3 illustrates the method of how the multiprocess scheduler operates and Figure 4 illustrates the method of the task control functions. Figures 3 and 4 are described in Col. 5, line 48 to Col. 8, line 6.

16.   With regard to Claim 11, Claim 11 is the same as Claim 1, except that Claim 11 is for a medium for mediating a program to be executed on a computer. The method (101-109, Figure 11; Col. 11, lines 31-67; Col. 12) disclosed by Yutaka is a program that is executed on a computer (42, Figure 1; Col. 11, lines 31-34), so Yutaka discloses a medium for mediating this program to be executed on a computer.

Peaslee discloses a programmable scheduler (Col. 1, lines 31-35), so the method (Figures 3 and 4; Col. 5, line 48- Col. 8, line 6) is a program. Peaslee also suggests that the program is executed on a computer (Col. 1, lines 48-53), so Peaslee discloses a medium for mediating a program to be executed on a computer.

17.   Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yutaka (US 5,664,163) in view of Peaslee (US 5,265,203), further in view of Zhao (US006405267B1).

18.   With regard to Claim 15, Yutaka and Peaslee are relied upon for the teachings as

discussed above relative to Claim 1.

However, Yutaka and Peaslee do not teach that the scheduler generates the

drawing commands to be transferred from the first apparatus to the second apparatus by

combining an effect of the plurality of drawing commands which affect a same area in a

predetermined short period of time on a frame buffer. However, Zhao describes

generating the drawing commands to be transferred from the first apparatus (CPU) to the

second apparatus (graphics device) (Col. 1, lines 21-30) by ordering the drawing

commands (Col. 2, lines 43-59) by putting the drawing commands into slots in the

storage buffers, the slot selected based on portions of the address information associated

with the data item. The data in the storage buffers is then provided to a command

interpreter for further processing by the graphics device (Col. 3, lines 21-35). Therefore,

Zhao discloses combining or merging an effect of the plurality of drawing commands

which affect a same area. The storage buffers receive these drawing commands from the

FIFO, which outputs the drawing commands at graphics device clock rate (Col. 3, lines

21-35). This means that the drawing commands that are combined or merged which

affect a same area are effective for a predetermined short period of time on a frame

buffer, the predetermined short period of time being in accordance with the graphics

device clock rate.

It would have been obvious to one of ordinary skill in this art at the time of

invention by applicant to modify the devices of Yutaka and Peaslee so that the scheduler

generates the drawing commands to be transferred from the first apparatus to the second

apparatus by combining an effect of the plurality of drawing commands which affect a

same area in a predetermined short period of time on a frame buffer as suggested by Zhao

because Zhao suggests the advantage of increasing effect bus bandwidth (Col. 2, lines 43-

59).

19.   With regard to Claim 16, Claim 16 is similar in scope to Claim 15, and therefore

is rejected under the same rationale.

20.   With regard to Claim 17, Claim 17 is similar in scope to Claim 15, and therefore

is rejected under the same rationale.

21.   Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Yutaka (US 5,664,163) in view of Peaslee (US 5,265,203), further in view of Tidwell

(US006437789B1).

22.   With regard to Claim 18, Yutaka and Peaslee are relied upon for the teachings as

discussed above relative to Claim 1.

However, Yutaka and Peaslee do not teach that the communication controller

transfers only updated areas on a frame memory by analyzing graphics commands in a

form of drawing commands to the second apparatus. However, Tidwell describes that if

a slot 12 of the write cache 24 has been changed, and needs to be written to the DRAM, a

"dirty" flag is set for that slot until the data is written back to the DRAM (Col. 7, lines

61-64). The cache memory is part of the frame buffer (Col. 4, lines 2-4). The graphics

commands cause the graphics memory to store pixel data received from the write cache

memory (Col. 11, lines 33-39). Therefore, only the updated areas on a frame memory are transferred by analyzing graphics commands in a form of drawing commands from the first apparatus (24) to the second apparatus (DRAM).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the devices of Yutaka and Peaslee so that the communication controller transfers only updated areas on a frame memory by analyzing graphics commands in a form of drawing commands to the second apparatus as suggested by Tidwell because it inherently avoids unnecessary transfers and therefore saves processing resources (Col. 7, lines 61-64).

23.   With regard to Claim 19, Claim 19 is similar in scope to Claim 18, and therefore is rejected under the same rationale.

24.   With regard to Claim 20, Claim 20 is similar in scope to Claim 18, and therefore is rejected under the same rationale.

25.   Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yutaka (US 5,664,163) in view of Peaslee (US 5,265,203), further in view of Epard (US005241625A).

26.   With regard to Claim 21, Yutaka and Peaslee are relied upon for the teachings as discussed above relative to Claim 2.

However, Yutaka and Peaslee do not teach that the first apparatus includes a first

drawing engine and the second apparatus includes a second drawing engine. However,

Epard describes that the first apparatus (50, Figure 5A) includes a first drawing engine

(55) and the second apparatus (60) includes a second drawing engine (61) (Col. 48, lines

26-57).

It would have been obvious to one of ordinary skill in this art at the time of

invention by applicant to modify the devices of Yutaka and Peaslee to include a first

drawing engine and the second apparatus includes a second drawing engine as suggested

by Epard because Epard suggests that in order for the first apparatus to transfer image

data to the second apparatus, the first apparatus must have a drawing engine to first

process the image data. In order for the second apparatus to display this image data, it

must also have a drawing engine (Col. 3, lines 5-43; Col. 48, lines 26-57).

27.   With regard to Claim 22, Yutaka and Peaslee do not teach that the first apparatus

and the second apparatus include redundant drawing engines. However, Epard describes

that the first apparatus (50, Figure 5A) and the second apparatus (60) display the same

information (Col. 3, lines 5-43). Therefore, Epard describes that the first apparatus and

the second apparatus include redundant drawing engines (55, 61) because both drawing

engines process the same information.

It would have been obvious to one of ordinary skill in this art at the time of

invention by applicant to modify the devices of Yutaka and Peaslee so that the first

apparatus and the second apparatus include redundant drawing engines as suggested by

Epard because Epard suggests that the second apparatus is to display the same image data

as that of the first apparatus. Therefore, the first apparatus and the second apparatus must include redundant drawing engines (Col. 3, lines 5-43).

28.   With regard to Claim 23, Yutaka and Peaslee do not teach that the first apparatus comprises a computer including a first drawing engine, and wherein the second apparatus comprises a display apparatus including a second drawing engine. However, Epard describes that the first apparatus (50, Figure 5A) comprises a computer including a first drawing engine (55), and wherein the second apparatus (60) comprises a display apparatus (65) including a second drawing engine (61) (Col. 3, lines 5-44; Col. 48, lines 26-57).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the devices of Yutaka and Peaslee so that the first apparatus comprises a computer including a first drawing engine, and wherein the second apparatus comprises a display apparatus including a second drawing engine as suggested by Epard because Epard suggests that the first apparatus must comprise a computer in order to process the image data, and the second apparatus must comprise a display apparatus in order to display the information (Col. 3, lines 5-44; Col. 48, lines 26-57).

29.   With regard to Claim 24, Yutaka and Peaslee do not teach that the first drawing engine and the second drawing engine each include a dedicated frame memory unit. However, Epard describes the first drawing engine (55, Figure 5A) and the second drawing engine (61) each include a dedicated frame memory unit (57, 65; Col. 48, lines 26-57).

It would have been obvious to one of ordinary skill in this art at the time of

invention by applicant to modify the devices of Yutaka and Peaslee so that the first

drawing engine and the second drawing engine each include a dedicated frame memory

unit as suggested by Epard because Epard suggests that both the first drawing engine and

the second drawing engine need a dedicated frame memory unit to store image data that

is processed by the drawing engines (Col. 48, lines 26-57).

Allowable Subject Matter

30.   Claims 3-5, 8, 9, 12-14 and 25 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject

matter:

31.   The prior art taken singly or in combination do not teach or suggest a means for

merging comprises a scheduler for judging whether an offset can be performed by

merging an increment of data volume caused by a change of drawing commands, as

recited in Claims 3, 8, and 12. Claims 4, 5, 9, 13, and 14 depend from these claims, and

therefore also contain allowable subject matter. The prior art also does not teach the

apparatus of Claim 21, wherein the first drawing engine and the second drawing engine

generate identical images including a different timing due to at least one communication

error from the first apparatus to the second apparatus, as recited in Claim 25.

32.   The closest prior art (Baber US006279041B1) teaches that the means for merging

comprises a scheduler for judging whether an offset can be performed by merging an

increment of data volume caused by a change of commands (Col. 14, lines 49-50; Col.

15, lines 26-35; Col. 18, lines 1-3). However, Applicant has submitted an affidavit to

overcome this reference.

33.   Another prior art (Nitta US006392619B1) teaches the data transfer of images for

which the same data is continuously transferred (Col. 9, lines 7-10), meaning that the first

apparatus and the second apparatus generate identical images. Nitta describes a different

timing due to a data transfer delay from the first apparatus to the second apparatus (Col.

10, lines 59-67). However, Nitta does not teach merging graphics commands.

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

1.   Baber (US006279041B1) teaches improved performance for data

communications in a low-speed communication environment such as wireless

communications (Col. 2, lines 34-37).

2.   Nitta (US006392619B1) teaches a data transfer device and a liquid crystal display

device which can reduce the power consumption in a data bus (Col. 1, lines 49-52).

3.   Vegesna (US 5,640,588) teaches a scheduler (2, Figure 18) for merging a plurality

of transfer data in accordance with the mutual dependency of the instructions among

themselves (Col. 3, lines 12-37; Col. 23, lines 6-20). Vegesna also teaches that when

there are data dependencies between instructions, they cannot be issued simultaneously

(Col. 33, lines 38-40), and Vegesna suggests the advantage of achieving multiple

launches and executions of the instructions by merging the data in accordance with the

mutual dependency of the instructions among themselves (Col. 3, lines 12-37). Vegesna

discloses both the apparatus and method (Col. 1, line 12). The details of the method for

merging a plurality of transfer data in accordance with the mutual dependency of the

instructions among themselves are described in Col. 26, lines 4-62.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than

SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joni Hsu whose telephone number is 571-272-7785. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH

Kee M. Tung
Primary Examiner